Nat. Hist., a new Rana, three Bufos, and *Phrynella pulchra*, all from Malacca.

MAMMALS.—According to Dr. J. B. Sutton, animals are not free from certain diseases thought to be referable in man to his erect position. One-fourth of the female monkeys dying in the London Zoological Gardens have displacement of the uterus, and the same disease occurs in the lioness, tapir, Cape hunting-dog, pygmy hog, antelope, etc., and in domesticated mammals. Two cases of inguinal hernia in monkeys are recorded, and the disease is said to be common in horses.—*P. Z. S.*, April, 1886.

Balænoptera borealis, or Rudolphi's Rorqual, the "Sejhval" of the Norwegian whalers, proves to be a sufficiently common species, though scarcely known before 1882. In 1885, most of the whales caught along the Finmark coast were of this species. Its average length is about forty-four feet. It is less robust than *B. rostrata*, and may be recognized in the sea by its high, black dorsal fin, more slender head, and more rounded snout. The color is dark gray-blue, except that the belly is more or less white as far as the genitalia. Both sexes seem to attain about the same size; if there is any difference it is in favor of the female. The flippers are slender and pointed, and relatively shorter than in any other species. A new species of Echinorhynchus (*E. ruber*) usually infests the intestines in great numbers, the copepod (*Balænopterus unisetus*) occasionally infests the baleen-plates, and a true ecto-parasite (undescribed) is also occasional. The stomachs of the specimens examined were filled with the remains of the copepod *Colarius finmarchicus*.

The species of Capra, according to Mr. P. L. Sclater, are confined to the following localities: *C. pyrenaica*, to the Pyrenees, Central Spain, and the higher ranges of Andalusia and Portugal; *C. ibex* (the Steinbok), to the Alps of Switzerland, Savoy, and the Tyrol; *C. ægagrus* (the Wild Goat), to Crete and some of the Cyclades in Europe, and through the mountains of Asia Minor and Persia to Sind and Baluchistan; *C. pallasi*, to the Caucasus; *C. sinaitica*, to the mountains of Upper Egypt, the Sinaitic peninsula, and Palestine; *C. walie*, to Abyssinia; *C. sibirica*, to the Altai and the Himalayas; *C. falconeri* (the Markhoor), from the Pirpanjal range, south of Cashmere, into Afghanistan and Gilgit on one side, and the Sulemani range on the other; *C. jemlandica* (the Tahr), to the Himalayas, from Cashmere to Bhotan; and *C. hylocrius*, to the Neilgherries, Anamallays, and other ranges of Southern India.

EMBRYOLOGY.[1]

The Development of Spiders.—The Arachnids are receiving considerable attention recently at the hands of embryologists.

[1] Edited by Prof. JOHN A. RYDER, Biological Department, University of Pennsylvania, Philadelphia.

The latest paper to be recorded is that of Schimkewitsch,[1] on the development of several species of spiders, the main features of which were outlined in a preliminary paper in the *Zoologischer Anzeiger* for 1884. After describing the envelopes of the egg and the composition of the yelk (of which he recognizes three kinds), he proceeds to the segmentation. In this he is inclined to follow Ludwig rather than other observers in the recognition of a central segmentation and a migration of some of the cells to the surface to form the blastoderm, while others remain behind in the yelk, where, in the shape of polynuclear yelk-masses, they represent and finally result in the endoderm. After the formation of the blastoderm, three processes occur nearly simultaneously,—the breaking down of the yelk-pyramids, the concentration of the primary ectoderm, and the formation of the mesoderm, these being individual variations in the species studied. The concentration of the primary ectoderm consists in a flattening and consequent expansion of the cells on one side of the yelk, while on the other they become thicker and more cylindrical, thus giving rise to the germinal area. Although Schimkewitsch appears to be unaware of this fact, this process is paralleled in many Arthropods, and was commented upon at some length by Mayer (*Jenaische Zeitschrift*, xi., 1877). According to Schimkewitsch, the mesoderm arises, in some species, from the blastoderm, in others by budding from the entoderm. His figures, however, all seem reconcilable with the view that they all arise from the blastoderm. The primitive cumulus is, according to Schimkewitsch, the anal lobe, while the "white spot" of the "comet-stage" forms the cephalic lobes,—conclusions somewhat at variance with those of Morin[2] and Locy, the latter reversing the ends of the embryo.

The account of the external development adds but little to our previous knowledge, the principal points being that the mandibular segment is budded from the cephalic one, that Croneberg's antennæ are the rudiments of the upper lip, and that no appendages are developed at any stage upon the first abdominal segment.

In the internal development there are more points to be noticed. The splitting of the mesoderm begins in the fifth segment of the body. At first the resulting cœlomatic cavities are distinct, but soon they run together in the thoracic segments. At about this stage begins the formation of a secondary entoderm, composed of cells budded from the polynuclear yelk-masses, and taking a peripheral position in the yelk. These, thinks Schimkewitsch, may possibly be the yelk-mesoderm of Balfour; but our author does not make it clear how they then pass through the splanchnopleure and take a position in the body

[1] Archives de Biologie, vi. pp. 515–584, pls. xviii.–xxiii., 1887.
[2] *Cf.* Am. Nat., xxi. p. 294, 1887.

cavity; nor do his statements seem conclusive that they give rise to the blood-corpuscles and the fat-bodies. The fact that the cells which he finds in the pericardium may originate from the entoderm and may form blood-corpuscles is not so doubtful. From the somatopleure he derives (1) all the muscles of the body except those of the mid-gut *si elle existe;* (2) the aponeurotic layer of the cephalothorax; (3) the membranes of the fore and hind guts, of the tracheæ and glands, and of a portion of the genital ducts,—that is, of all organs derived from an ectodermal invagination; and (4) the sarcolemma and neurilemma. From the splanchnopleure are developed (1) the envelopes of the mid-gut, (2) the genital organs, (3) the pericardium and the pulmonary veins, while the dorsal mesentery gives rise to (1) the heart, (2) the lateral arteries, and (3) the suspensors of the heart.

As will be seen, Schimkewitsch accepts the idea of Bütschli, that the cavity of the heart corresponds to the segmentation cavity, and that its walls are derived from the two moities of the mesentery,—facts which explain the communication of this organ with the yelk. The splanchnic mesoderm encroaches upon the yelk, dividing it into lobes, which persist in the lobes of the liver. The epithelium of the mid-gut begins to form first behind, that of the liver being at first formed of two kinds of cells,—one representing the true hepatic, the other ferment, cells. At the time of hatching no genital openings are developed, but the genital glands bend downwards at their anterior extremities, and this decurved portion represents the mesodermic portion of the genital duct.

Of the ectodermal structures we need only to say that the account of the development of the eyes is at variance with the results of Locy, and then turn to the lungs and nervous system. Regarding the discussion of the former and their homologies with the branchiæ of Limulus, our author seems as much at sea as he did in his former paper[1] on the anatomy of Epeira. He says that at first the lung is a bunch of tracheæ, but his sole figure of the embryonic lung exactly parallels in its structure the early gill of Limulus. The early gill-book and lung-book (not the stigma, etc.) could have been drawn the one from the other without one's being able to detect the difference.

The first appearance of the ventral cord is by two thickenings near the median line, which from the first have a segmented character. Later, they become widely separated, as a result of the reversion of the embryo. The rudiments of the brain are at first distinct from each other, and from those of the ventral cord. The ganglia of the cephalothorax are cephalic, rostral, mandibular, and maxillary, one pair each, while the pedal ganglia number four pairs. His sections show the cephalic invaginations described by Balfour, but he gives no suggestions as to their fate

[1] Ann. Sci. Nat., VI., xvi., Art. I., pp. 67 and 84, 1884.

in the adult. The cephalic ganglia give rise to the optic nerves; the rostral ganglia, which occupy a place on the supero-lateral face of the supra-œsophageal ganglia, are compared with the labial ganglia described by Tichomiroff in Bombyx, while the mandibular ganglia, which also enter into the composition of the brain, give rise to the sympathetic nerve.

The speculations which conclude the article, as to the homologies of the nervous system in various Metazoa, are not equal to the rest of the paper.—*J. S. K.*

MICROSCOPY.[1]

Method of Staining and Fixing the Elements of Blood.[2]—Recent discoveries of morphological elements in the blood hitherto unknown, as well as the newly published facts concerning its coagulation, have aroused an interest in the subject which calls for an acquaintance with the methods with which it is possible to follow those results. Accordingly, I would like to describe the method employed in this laboratory; for, although it has been mentioned by Professor Gaule in his lectures for several years, it has not as yet been published.

The methods formerly used were that of examining fresh blood and that, perfected by Ehrlich, which consisted in staining dried blood.

Our method consists in a series of manipulations requiring only thirty-five minutes for their completion.

The following is a list of the reagents, together with the length of time and the order in which each is to be used:

	Min.
1. Corrosive sublimate (concentrated solution)	6
2. Distilled water	1
3. Absolute alcohol	5
4. Distilled water	1
5. Hæmatoxylin (½ per cent. alum solution to which, for every 100 c.cm. employed, 20 drops 5 per cent. alcoholic solution have been added)	6
6. Distilled water	1
7. Nigrosin (½ per cent. water solution)	1
8. Distilled water	½
9. Eosin (1 gr. eosin dissolved in 60 c.cm. alcohol; 140 c.cm. distilled water)	2
10. Alcohol	5
11. Oil of cloves	1–2
12. Xylol.	
13. Canada balsam (diluted with xylol until it readily flows).	

As receptacles for these fluids, each person has upon his table

[1] Edited by C. O. WHITMAN, Milwaukee, Wisconsin.

[2] From the Physiological Laboratory at Zurich.